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BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF HAWAII

---- In the Matter of ----	
PUBLIC UTILITIES COMMISSION	DOCKET NO. 05-0069
HAWAIIAN ELECTRIC COMPANY, INC. For Approval and/or Modification of Demand-Side and Load Management Programs and Recovery of Program Costs and DSM Utility Incentives	

HAWAII RENEWABLE ENERGY ALLIANCE'S POST-HEARING REPLY BRIEF

AND CERTIFICATE OF SERVICE

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The Hawaii Renewable Energy Alliance ("HREA") hereby submits its Post-Hearing Reply Brief to the Public Utilities Commission ("Commission") in accordance with the Commission's September 28, 2006 letter regarding Post-hearing opening and reply briefs. On March 16, 2005, the State of Hawaii Public Utilities Commission ("Commission") filed its Order No. 21698 opening the instant docket ("docket"). On April 14, 2005, the Commission filed its Order No. 21749, which granted the April 4, 2005 motion by the Hawaii Renewable Energy Alliance ("HREA") to intervene in the docket. On October 25, 2006, HREA submitted its Post-Hearing Opening Brief.

I. HREA'S OBSERVATIONS, RESPONSES TO PARTIES AND RECOMMENDATIONS

The following are HREA's observations, responses to the Parties in their Opening Briefs, and final recommendations to the Commission.

A. Statewide Energy Policy Issues

(1) Whether energy efficiency goals should be established and if so, what the goals should be for the State?

HREA Observations:

Overall, HREA observes that the Parties, as a group, don't seem to be that concerned about defining energy efficiency and that bothers us. How can we reach agreement on what the goals should be, if we don't even agree on what energy efficiency is, or, for example, whether we really should be talking about Demand-side Management ("DSM")? The Parties did weigh in as to whether the goals should be statewide or island-by-island with the preference towards island-by-island. HREA notes that we had a similar discussion when the legislature was debating the merits of the Renewable Portfolio Standard ("RPS") and the enacted RPS has become a statewide goal. The Parties also disagreed as to how the goals should be established. Some preferred the Commission to set the goals, others preferred the goals to be set in IRP and yet others preferred to let the market determine the goals through competition. HREA notes that RPS is a policy established by the legislature and IRP now can be viewed as a tool for implementing the RPS. Thus, HREA has to ask, why should energy efficiency goals be treated differently?

HREA Response to Parties:

Regarding definitions, HREA agrees with both the County of Maui ("COM") and the Hawaii Solar Energy Association ("HSEA") that we should move to a broader definition of DSM, e.g., perhaps use the California definition as recommended by HSEA. This approach is consistent with what HREA has recommended in its Opening Brief. However, we believe the definition of DSM should Hawaii-specific and that is what we have provided.[1]

HREA disagrees with HECO's approach to defining energy efficiency which they expressed in their Opening Brief as follows[2]:

> HECO's understanding is that the issue of statewide goals in this proceeding applies to energy efficiency only as differentiated from load management (including demand response programs).

[1] HREA Opening Brief at 3 – 4.
[2] HECO Opening Brief at 11.

This apparent definition, as HECO did not state a definition explicitly anywhere in their Opening Brief, implies that other DSM measures, such as load management and conservation are not to be considered in this docket. However, it appears that HECO is including solar hot water technologies in its energy efficiency goal vis-à-vis, its Residential Efficient Water Heating ("REWH") program. Thus, HECO is calling solar hot water an energy efficiency technology (or measure) when it is not. Solar hot water is a renewable displacement technology (and to some a conservation measure), per the current definition of renewable energy in the RPS statute. Thus, at best, HECO's definition of energy efficiency is ambiguous.

Regarding the process to set the goals, several Parties (including the Consumer Advocate ("CA"), the County of Kauai ("COK"), COM, HECO and KIUC) favor setting the goals in IRP. This is an interesting recommendation, as IRP has not been particularly relevant as an implementation tool in the past five to ten years, and in our view, is in need of a major overhaul if it is be the implementation tool for meeting consumer electricity needs as well as supporting state policy objectives. Moreover, HREA's view is that IRP never has been, and is not likely, to be the best venue for resolving state policy issues. The IRP clearly is a tool for the utility to show how they plan to meet forecasted customer demand with a suite of supply-side and demand-side measures. However, setting state policy is not the utility's job.

Thus, regardless of what market structure we have for implementing DSM, the legislature and/or the Commission need to set the state policy goals and requirements for energy efficiency as the legislature did for renewables. This position is supported by HREA, Life of the Land, and, in part, the Rocky Mountain Institute ("RMI)."[3]

Regarding the level of the goals, there is some support for the utility, via its internal analysis, to set the quantitative level of the goal. However, HREA's view again is that the Commission, in this case, should set the goals as a state policy decision.

HREA Recommendations:

[3] RMI Opening Brief at 4, the Commission should set the initial energy efficiency goal.

In our Opening Brief, we stand firm on our recommendations to broaden the definition of energy efficiency to DSM and we provided specific language for the DSM definition, as well as revisions to the definition of "DSM programs" in the IRP Framework. We request again that the Commission establish and implement a DSM Portfolio Standard ("DPS") to complement our RPS. Given that, we have also provided as recommendations in our Opening Brief for revising the definitions in the RPS statute. In approving these HREA's recommendations, the Commission will confirm that the important focal point for the DSM definition is the utility meter, just as it was important in developing an understanding of the DG market (i.e., DGs can be on either side of the meter). Specifically, the key DSM elements are those measures to help the customer save money on his bill by reducing his demand and energy requirements (i.e., the "customer-side-of-the-meter"). We also recognize and include load management measures (i.e., the "utility-side-of-the-meter") in the DSM definition to be consistent with the existing IRP framework definition of DSM programs.

(2) What market structure(s) is (are) the most appropriate for providing these or other DSM programs (e.g., utility-only, utility in competition with non-utility providers, non-utility providers)?

HREA Observations:

From start to finish in the instant docket, four alternative market structures have been considered: utility-only, non-utility, hybrid, and competitive bidding for DSM. So where are the Parties positioned now? KIUC and COK appear to be the only parties supporting the utility-only structure, but for KIUC only; the other nine Parties are in support of this KIUC and COK position. LOL has consistently favored the non-utility (a la "Efficiency Vermont") and the CA has expressed support for the third party administrator approach. Lining up with HECO in favor of the hybrid approach are the COM, HSEA and RMI. Several Parties appear neutral, i.e., COK (with respect to HECO's service territory), DOD and The Gas Company (with respect to the electricity sector, while requesting that TGC not be required to implement DSM until such time TGC prepares an IRP). Finally, HREA initially promoted competitive bidding for DSM, but in our

Opening Brief, we moved closer to the position of the LOL and CA. Specifically, in part, given concerns about the feasibility of conducting a competitive bidding process for the third party administrator, we now believe the best approach is to follow the intent of the legislature, i.e., the Commission has been provided the authority to appoint a third party administrator, if the Commission determines that to be appropriate. HREA maintains that it is appropriate.

In making the market structure decision, we believe the key factors that the Commission should consider are: (1) the inherent conflict for the Investor Owned Utility ("IOU"), such as HECO, to promote DSM within its traditional cost-of-service regulatory scheme, (2) the cost-effectiveness of alternative approaches, including (3) whether some DSMs should stay with the IOU because the IOU has the clear advantage technically or administratively or both, and (4) other issues, as such impacts on consumers, and the challenge of meeting our current capacity and energy needs, while considering the merits of alternative structures for the long-term.

HREA Response to Parties:

Regarding the inherent conflict for the IOU, HREA believes this is an important, if not the most important criterion. Specifically, we don't see how this conflict can be removed without transferring DSM to a third party administrator ("TPA"). It appears that LOL and the CA agree with us on this criterion, while HECO continues to argue and search for the right incentive package that will work for them and the other Parties, and somehow remove the conflict in the process. In fact, HREA observes that the primary reason DSM has worked for HECO to date has been the luxury of the recovery of lost margins mechanism and shareholder incentives. The net result has not been favorable to the customer/ratepayer. Given that HREA, CA, DOD and others object to the continuation of this treatment, and given that the Commission has ruled on this matter,[4] the issue appears now to be moot.

[4] *See* Commission Decision and Order No. 2240.

That leaves us with the question of what other alternatives are there, other than transitioning to a TPA? Perhaps the inherent conflict could be removed by application of some form of a decoupling mechanism? However, notwithstanding RMI's arguments in favor, HREA sees this approach as problematic and agrees with the DOD's recommendation to: "Reject proposals to decouple revenues and earnings from sales volumes. The track record for these programs has been just short of disastrous, and nothing offered in this proceeding indicates that there would be more good than harm for a decoupling approach."[5]

Regarding the cost-effectiveness of alternative approaches, HREA notes that there has been insufficient, if not a paucity of, hard data to compare the cost-effectiveness of alternative market structure approaches to a high degree of confidence. For example, there don't appear to be any studies available comparing any of the seventeen clean energy funds, which were discussed briefly in Exhibit A of our Opening Brief. In other words, there have been no definitive studies comparing such figures of merit as total program costs, administrative costs, dollars MWh per year saved and dollars per MW of capacity reduction. But let's review briefly the analysis that has been made available in the instant docket.

In their Opening Brief, HECO presented a comparison of the cost-effectiveness of their proposed DSM and Load Management ("LM") programs with Efficiency Vermont[6] for the 10 years of their DSM program from 1996 to 2005, which resulted in overall reductions of energy consumption of 2.4 million MWH and peak demand of 66 MWs. Notwithstanding that HECO has not provided the back-up data (or at least HREA cannot find the data in any of HECO's filings on the instant docket) to support these results, HREA will assume they are correct, and have been adjusted, as HECO states, to exclude lost margins. HECO then argues that the achievement of its savings has been less than 24 cents/kWh for the initial year compared to 28 cents/kWh for Efficiency Vermont. However, HECO also gives no indication about the types of

[5] DOD Opening Brief, pg. 11.
[6] HECO Opening Brief, pgs. 147 - 148, and its Final Statement of Position (pg. 16, n.8).

DSMs employed in Vermont vs. Hawaii, so it is hard to tell if we are comparing "apples to apples."

More importantly, HREA does not believe Vermont is the best state to compare with Hawaii. For example, while Vermont has a low population (about 625,000), its utility structure is much different than Hawaii's. Specifically, Vermont has a large number of cooperatives, while Hawaii has one cooperative and one comparatively large IOU.

HREA believes Oregon is a much better state for comparing to Hawaii, given that its electrical utility structure is more like Hawaii's than is Vermont's, even though Oregon is a larger state. As noted in Exhibit A in our Opening Brief, Oregon has a population of about 3.6 million people, of which 75% are served by two IOUs and the remaining 25% by 25 cooperatives, while Hawaii has about 1.3 million people, of which 95% are served by one IOU and the remainder by one cooperative.

Given that, in Exhibit A to this document, HREA has prepared an analysis of HECO's projected costs for its proposed enhanced DSM and LM programs, based on data contained throughout (but not summarized) in HECO's Opening Brief. Also, shown are data from the Energy Trust of Oregon (see Exhibit A to our Opening Brief). As one can see from Exhibit A to this document, the Energy Trust spends about $11M a year, while reducing average annual capacity demand by 20 MWs ($550/kW) and average annual energy reductions at 2 cents/kWh. HECO's cost for its DSM programs are estimated to be $14.3M in the first year, while reducing annual capacity demand by 10.5 MW ($1,361/kW) and with annual energy reductions at 2.7 cents/kWh (based on a 15-year lifetime for the DSM measures).[7] Also note that the Energy Trust's administrative costs are 11% of the total program costs, while HECO's are projected to be 40%. Note: this analysis supports the overall analysis that HREA included as Exhibit B to

[7] HREA notes some differences in our analysis and HECO's, which we cannot explain at this time, e.g., HECO claims long-term annual energy savings at 2 cents/kWh, while we have calculated 2.7 cents. However, we think it is more important to look at the trends in the data, rather than the absolute numbers.

our Opening Brief – bottom-line: Hawaii has high historical DSM costs. We also note that the HECO's LM program capacity reduction costs do look quite attractive at $587/kW, than their mainstream DSM program costs at $1,361.

So where does that leave us? As noted above, we need more data from more states to draw real specific conclusions with a higher level of confidence, especially about the actual magnitude of costs. To HREA, HECO's cost looks high from our previous analysis in our Opening Brief and our analysis in Exhibit A to this document, while HECO points out one case where they look competitive, i.e., with respect to Efficiency Vermont. Bottom-line: at this point basing a decision purely on cost projections is not warranted.

Regarding areas where HECO has a clear advantage technically or administratively, or where it would be difficult for a TPA to respond, HREA agrees and perhaps some other Parties will also, that HECO should retain responsibility for load management programs.

Given that, should one then start building a case for the hybrid model? Before rushing to that conclusion, are there other areas where HECO has a clear advantage? At this point, HREA can only think of one other area, and that would be DSM measures on the "utility-side-of-the-meter," e.g., efficiency improvements to the T&D infrastructure and the utility's existing fleet of generators, or thinking a bit more outside the box – incorporate bottoming-cycle on their existing generators. See also our comments below on establishing a TPA.

Regarding other issues, the number one to HREA is to consider what is best for the consumer. However, we do not think it is simply which structure is the lowest cost, as other factors must be taken into consideration. These factors include customer choice (e.g., which structure will promote innovation and competition), and how easy it is for customers to participate in DSM programs. In this area, we believe non-profits may have an advantage over host utilities, based on our conversations with the Energy Trust of Oregon.

Other issues have been raised by HECO, e.g., (i) transferring hard-to-reach markets to the TPA, (ii) HECO should retain the bulk of DSM as part of its obligation to serve, (iii) HECO

should retain the bulk of DSM, based on California's experience, (iv) difficulties and costs associated with transitioning from HECO to a TPA, and (v) recommending a similar regulatory scheme for a TPA as for the host utility. By and large, HREA views each of these issues as "red herrings."

In response, HREA believes the approach to selecting and establishing a TPA, as recommended in our Opening Brief (Exhibit A), will address each of these issues. First, as the TPA is selected (and a non-profit is formed to be the TPA as recommended by HREA in its Opening Brief), the Commission would negotiate a scope of work with the non-profit after a substantial period of consideration of the issues, including solicitation of input from all interested parties. HREA has recommended that the non-profit be tasked to handle all of the customer-side DSM, as we have defined DSM. This would include the hard to reach markets, including those proposed by HECO and at least one already in place, i.e., the REWH, in part, since HECO has found that high rebate levels are required to "move the market."

Second, the argument regarding the obligation to serve, which was also raised in the Competition Docket (No. 03-0372) and shown to be non-persuasive, is specious. The TPA would be required to coordinate closely with the host utility on its DSM program plans, and the host utility would adjust its load forecast accordingly. In addition, given that DSMs will occur in "smaller, easier-to-digest chunks" and are modular, their implementation risks are lower compared to those associated with new power plants. To be clear, the potential adverse impact of installing only 2,500 solar hot water heaters versus 3,000 planned is substantially less than a year's delay in the installation, construction and initial operations of a 100 MW combustion turbine.

Third, Hawaii should not be compared with California in the context of the establishment and implementation of DSM, particularly given that California's experiment with restructuring had a large impact on their decision to return the responsibility of DSMs to the utilities. We are

not living in a restructured state, and furthermore, in general, HREA believes that experience has shown there is a greater challenge for TPAs in the larger states.

Fourth, HREA believes the process we have outlined in our Opening Brief to establish and implement the TPA will provide time to coordinate all issues associated with the transition period. Experience in Oregon and Vermont has shown that the transition can be successfully completed in three years, and we believe that is a reasonable timeline.

Finally, regarding regulatory schemes, it makes absolutely no sense to have a TPA be held to the same "cost-of-service" regulation as the host utility. For example, there would be no need for docket to identify revenue requirements and adjust rates. The TPA will have a known budget based on the Public Benefit Fund ("PBF") and would be strongly motivated to achieve DSM savings given that budget. As a case in point, Oregon has shown that regulation via a contractual arrangement works effectively, and all necessary regulatory requirements can be incorporated into the contract between the Commission and the TPA.

HREA Recommendations:

HREA stands firmly on its recommendations that the Commission proceed as we discussed in our Opening Brief to appoint the TPA. During that process, decisions can be made regarding the host utilities role, as part of its overall franchise agreement and/or as a contractor to the TPA.

(3) For utility-incurred costs, what cost recovery mechanism(s) is appropriate (e.g., base rates, fuel clause, IRP Clause)?

HREA Observations:

HREA observes that some Parties (CA, DOD, HECO and TGC) support recovery of fixed costs in rate base, and non-recurring costs with a surcharge, and some Parties (HREA, HSEA, KIUC and RMI) prefer a surcharge mechanism. Other Parties (COK, COM and LOL) are neutral or have taken no position.

HREA Response to Parties:

HREA does not see a need to respond further at this time to the specific Parties' positions on this issue.

HREA Recommendations:

Given HREA's position on issue (2) – market structure, HREA supports recovery of utility–incurred costs via a surcharge, funded by a PBF, rather than in base rates, the fuel clause or IRP clause.

(4) For utility-incurred costs, what types of costs are appropriate for recovery?

HREA Observations:

HREA observes that all Parties appear to support recovery of all Commission-approved utility-incurred costs, whether the utility administers the DSM or coordinates with a TPA.

HREA Response to Parties:

HREA does not see a need to respond further at this time to specific Parties' positions on this issue.

HREA Recommendations:

Given HREA's position on issue (2) – market structure, HREA supports HECO's recovery of Commission-approved, HECO-administered DSMs via a PBF surcharge. The allowable costs would include costs associated with coordination within IRP to coordinate with the TPA.

In the case of KIUC, HREA supports recovery of DSM costs via their current IRP/DSM surcharge as they have recommended.

(5) Whether DSM incentive mechanisms are appropriate to encourage the implementation of DSM programs, and, if so, what is the appropriate mechanism(s) for such DSM incentives.

HREA Observations:

HREA observes that there in general support for incentives to reward good performance, but this support does not extend to recovery of lost margins and shareholders as discussed previously herein. KIUC has noted that incentives are not needed and are not necessary in

their case. HREA observes this should also be the case for non-profit organization that is appointed as a TPA.

In the case of an IOU, such as HECO, is there is a good argument for incentives to reward good performance? Historically, this appears to be the case, as financial incentives are certainly ingrained in the "cost of service" form of regulation in Hawaii. So, the remaining question is whether specific incentives are appropriate for HECO's good performance on DSM.

The DOD appears to be believe this is appropriate with the following statement in their Opening Brief:

> To the extent shareholders have the possibility of being rewarded for HECO performance that exceeds the expected level, they should similarly be subject to some reduction in compensation, i.e., a penalty, if the performance is below expectation. It is only fair and reasonable for any such incentive mechanism to operate on a symmetrical basis.[8]

HREA Response to Parties:

HREA does not see a need to respond further at this time to specific Parties' positions on this issue.

HREA Recommendations:

HREA supports DSM incentives to encourage customer investment in DSMs, such as rebates for purchase and installation of DSMs. However, we do not support continuation of HECO's recovery of lost margins and shareholder incentives. Finally, given our position on issue 2 – market structure, there would not be a need to establish a new incentive mechanism for HECO performance on DSM. For example, if HECO were to retain responsibility for LM programs and other utility-side DSMs, HREA believes there is already a mechanism in place to reward HECO for more efficient use of its generators. If this mechanism does extend to the complete supply-side infrastructure, perhaps the existing mechanism could be modified to incorporate all utility-side DSMs.

[8] DOD Opening Brief at 7.

B. HECO's Proposed DSM Programs Issues

(6) Whether the seven (7) Proposed DSM Programs (i.e., the CIEE, CINC, CICR, REWH, RNC, RLI, and ESH programs), the RCEA program, and/or other energy efficiency programs will achieve the established energy efficiency goals and whether the programs will be implemented in a cost-effective manner;

HREA Observations:

Overall, HREA believes there is good support for the Commission to approve the seven proposed HECO DSM programs with certain conditions, e.g., conditioned upon HECO's expediting measures in the short-term to reduce projected capacity shortfalls. The CA has not recommended approval for the RCEA program, HSEA has recommended specific enhancements for the REWH and RNC program, and HREA has recommended that the Commission approve a rebate program for Seawater Air Conditioning ("SWAC") Systems.

HREA Response to Parties:

HREA does not see a need to respond further at this time to specific Parties' positions on this issue.

HREA Recommendations:

HREA supports extension of HECO's seven programs on an interim, expedited basis to help reduce projected capacity shortfalls. Continuation of these programs would then be contingent upon the administrative responsibilities that HECO would retain in the long-run. We also have substantial concerns about with potential DSMs, such as SWAC, that have been overlooked by HECO. For an update on our position with respect to SWAC, see Section II.

(7) If utility-incurred costs for the programs in issue 6 are to be included in base rates, what cost level is appropriate, and what the transition mechanism for cost recovery will be until the respective utility's next general rate case;

HREA has no additional comments or replies to other Parties' Opening Brief positions on this issue at the present time.

(8) Whether HECO's proposed DSM utility incentive is reasonable, and should be approved, approved with modifications, or rejected;

HREA Observations:

In addition to our comments in response issue (5), HREA would like to note the CA's position with respect to HECO's latest proposed DSM utility incentive, which is as follows:

> HECO's proposed DSM utility incentive is **not** reasonable and thus should be rejected by the Commission.

HREA Response to Parties:

HREA does not see a need to respond further at this time to the specific Parties' positions on this issue.

HREA Recommendations:

HREA cannot support HECO's recovery of lost margins or shareholder incentives for implementing DSMs. HREA supports the CA's position (as stated above) on HECO's proposed DSM utility incentive.

(9) Which of the Proposed DSM Programs, the RCEA Program, and/or other energy efficiency programs should be approved, approved with modifications, or rejected

See our response to issue (6).

II. THE COMMISSION SHOULD ADOPT HREA'S REBATE REQUEST FOR SEAWATER AIR CONDITIONING BECAUSE THE REBATE IS NEEDED NOW, IN 2006-07, AND A PRESCRIPTIVE $500 PER TON REBATE IS NEEDED TO MOVE THE MARKET.

The following replies to statements made by other parties, including HECO and the Consumer Advocate, in their respective Opening Briefs filed October 25, 2006. On August 31, 2006, in conjunction with an evidentiary hearing on the docket, the Commission admitted into the record HREA's Hearing Exhibit 2 ("Hearing Exhibit 2"). Hearing Exhibit 2 requests the Commission to require HECO to include seawater air conditioning ("SWAC") in a HECO rebate program. The rebate levels sought are $500 per ton for SWAC district cooling systems and $500,000 per customer rebate limit (collectively, "rebate").[9]

[9] The docket parties and participants have exchanged information, and HREA has provided confidential data and information subject to a protective order, in support of the requested rebate. On September 8, 2006, Information Requests ("IRs") were filed by Life of the Land ("LOL"); the Hawaiian Electric Company, Maui Electric Company, and Hawaii Electric Light Company (collectively, "HECO"); and the State of Hawaii Consumer Advocate ("CA"). On October 6, 2006, the Commission approved and filed Protective Order No. 22929, Stipulation for Protective Order and Exhibit A ("Protective Order"). On October 10,

As a preliminary matter, HREA notes that it is encouraged by the high level of support and acceptance expressed for SWAC in Hawaii. This support continues to grow as the utility and consumers further recognize and understand SWAC's substantial economic and environmental benefits. Although differences over the requested rebate remain, HREA submits the following comments in a spirit of cooperation and in a concerted effort to aid the parties in resolving their differences with guidance from the Commission.

In addition, HREA recognizes that apart from weighing the merits of the parties' respective positions on the rebate, the Commission's foremost task is to uphold State law and policy mandates concerning Hawaii's energy future. These call for increased use of renewable energy, which will greatly assist efforts to meet statutory Renewable Portfolio Standards,[10] and at the same time provide significant energy efficiency benefits and reduction of greenhouse gas emissions.[11] Despite these mandates, Hawaii remains dependent on imported fossil fuels for more than ninety per cent of its energy needs and therefore dangerously vulnerable to supply disruptions and rising costs.

As an advanced, large-scale renewable energy technology with substantial economic and environmental benefits for the utility and consumers, SWAC stands poised to make a major contribution toward the implementation of State energy policies calling for increased use of

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2006, HREA filed its Supplemental Response to the LOL, HECO, and CA IRs with confidential information subject to the Protective Order. On October 6, 2006, HREA, HECO, the CA, LOL, and the Hawaii Solar Energy Association filed their position statements on the SWAC rebate proposal. On October 25, 2006, the parties/participants filed their Opening Briefs.

[10] *See* Haw. Rev. Stat. § 269-92 (requiring that "[e]ach electric utility company that sells electricity for consumption in the State shall establish a renewable portfolio standard of: (1) seven per cent of its net electricity sales by December 31, 2003; (2) eight per cent of its net electricity sales by December 31, 2005; (3) ten per cent of its net electricity sales by December 31, 2010; (4) fifteen per cent of its net electricity sales by December 31, 2015; and (5) twenty per cent of its net electricity sales by December 31, 2020.").

[11] *See* Haw. Rev. Stat. § 226-18 (calling for dependable, efficient, and economical statewide energy systems capable of supporting the needs of the people; increased energy self-sufficiency where the ratio of indigenous to imported energy use is increased; greater energy security in the face of threats to Hawaii's energy supplies and systems; and reduction, avoidance, or sequestration of greenhouse gas emissions from energy supply and use).

renewable energy and increased energy efficiency.[12] HREA therefore urges the Commission to consider the SWAC rebate request not only with regard to the parties' contentions, but in the context of this larger, overriding State policy mandate to increase the use of renewable energy and energy efficiency in Hawaii.

As explained below, HREA's position is that the requested rebate is appropriate and justified because the rebate is needed now, in 2006-07, and a prescriptive rebate at the level of $500 per ton is necessary to overcome market barriers and "move the market."

A. Introduction

For the proposed Downtown SWAC project,[13] the rebate is needed now in 2006-07. The requested rebate is appropriately timed to move the market because potential customers are actively considering contracts for SWAC service. The project is viable and well underway, as demonstrated by the key dates for construction and permitting, the extensive marketing efforts to date, and the professional qualifications of Honolulu Seawater Engineering, LLC ("HSWAC").

Delaying rebate authorization up to five years by placing it in HECO's fourth IRP, as recommended by the Consumer Advocate, is not warranted.[14] HSWAC estimates this delay could add as much as $20 million to Downtown SWAC project costs at an inflation rate of 3%. These increased project costs pose a serious threat to the project's viability.

The Consumer Advocate contends the Commission is unable to set the rebate level at this time because the impact of rebate payments on HECO's DSM budget may not be known

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[12] As HECO has acknowledged with regard to the joint HECO/Global Energy Partners, LLC Phase I study, "significant potential exists for additional energy savings on Oahu. These energy savings can best be realized through a major expansion of HECO's energy efficiency DSM efforts[.] . . . The commercial heating ventilation and air conditioning market . . . appears to hold significant potential for energy efficiency." *See* HECO Opening Brief at 35.

[13] HSWAC proposes a district cooling system to serve up to 25,000 tons of cooling in the downtown Honolulu area ("Downtown SWAC project"). In addition, a 25,000 ton SWAC project for Waikiki is in the early stages of development and two future 25,000 ton projects for Waikiki and the Pearl Harbor/Hickam Air Force Base/Airport area are also planned, for a total of 100,000 tons of SWAC planned for Oahu.

[14] HREA maintains that IRP cycles are too far apart and require too much time. A mechanism is needed to allow utilities to more rapidly respond to changing conditions (e.g., rapid increases in oil prices, availability of new technologies not adequately addressed in previous IRP cycles [e.g., SWAC], etc.). The current IRP process is not "nimble" enough.

until commencement of commercial SWAC service in mid-2009. The Commission can and should set the rebate level at this time, however, because HREA has provided extensive data, spreadsheets and information justifying the $500 per ton rebate level. In addition, what is needed now is rebate authorization, not rebate payment. HREA seeks Commission approval of the rebate so that prospective customers will have an incentive to sign contracts for SWAC service in 2006-07, regardless of actual payment of the rebate in 2009.

Nor is Consumer Advocate's contention that it lacks sufficient information a sound basis for further delay. HREA has exhaustively responded to all of the Consumer Advocate's information requests, secured a protective order, and provided dozens of pages data, spreadsheets, and other confidential information. This information proves the project is viable and cost-effective and otherwise directly responds to the Consumer Advocate's stated concerns.

The rebate level of $500 per ton is necessary to overcome market barriers and "move the market." HECO agrees a rebate is necessary but proposes a rebate in the range of $150 to $230 per ton. HECO does not dispute that building owners' costs for connecting to the SWAC system are estimated to be approximately $300 per ton. The proposed $150 to $230 per ton level is less than $300 per ton and it therefore will not provide sufficient incentive to overcome this market barrier. Nor will it encourage prospective customers to overcome other market barriers.

Insofar as it is unlikely to "move the market," HECO's proposed rebate appears to be inconsistent with its publicly-stated support for SWAC. HECO has written an open letter dated August 1, 2006 addressed to prospective HSWAC customers recommending them to "carefully consider the HSWAC proposed renewable energy program for your building." *Id.* HECO has also embarked upon a public relations campaign promoting energy efficiency and renewable energy in Hawaii featuring SWAC and other technologies. HECO's submissions to the Commission express strong support for SWAC in Hawaii.

Given HECO's publicly-stated expressions of support for SWAC, which are welcome and appreciated, the Commission should require HECO to provide a rebate level that is highly likely to overcome market barriers and ensure the success of SWAC in Hawaii, rather than a rebate level that does not even cover the cost to connect to the SWAC system.

B. The Rebate Is Needed Now, in 2006-07, and Authorization Should Not Be Postponed For Up to Five Years.

HSWAC's $120 million Downtown SWAC project is "real" and the rebate is needed now, in 2006-07. A rebate must be appropriately timed to move the market. The requested rebate is appropriately timed because: (1) potential customers are actively considering contracts for SWAC service; (2) the rebate is expected to influence potential customers in favor of signing contracts in 2006-07 for SWAC service; (3) the project is viable and well underway, as demonstrated by the key dates for construction and permitting, the extensive marketing efforts to date, and the professional qualifications of HSWAC; and (4) there is no sound basis for delaying rebate authorization by several years, as recommended by the Consumer Advocate.

1. Customers are actively considering contracts.

HSWAC seeks potential customers between now and December 1, 2007 and therefore dozens of potential customers are actively considering contracts for SWAC at this time. HSWAC's marketing efforts have included identifying potential customers in the Downtown service area (with a total market potential in excess of 48,000 tons of cooling demand), informing potential customers about the project, performing surveys of the buildings and associated on-site air conditioning equipment, and formally soliciting prospective customers since November 2005. To date, proposals and draft contracts have been provided for forty-two buildings representing half the total market potential for the Downtown service area.

2. The rebate is expected to move the market.

The rebate is expected to give potential customers an appropriate and effective economic incentive to sign contracts for SWAC service in 2006-07.[15] Potential customers must overcome market barriers. One market barrier is interconnection costs. HSWAC estimates interconnection costs are $300 per ton.[16] The $500 per ton rebate will pay this cost and therefore provide an incentive to prospective customers.

Potential customers must overcome other market barriers in addition to interconnection costs. Based upon discussions with building owners in the Downtown SWAC project area, and its extensive professional experience, HSWAC estimates that the additional rebate level of $200 is likely to provide sufficient incentive for potential customers to overcome these other market barriers. Thus, the proposed $500 per ton rebate level is expected to allow potential customers to overcome all market barriers.

3. The project is viable and well underway.

The project is viable and well underway, as demonstrated by the key dates for construction and permitting, the success of the extensive marketing efforts to date, and HSWAC's professional qualifications. Environmental permitting, environmental impact review, and final engineering are scheduled to be completed by December 1, 2007, which is also the construction start date. Downtown SWAC commercial service is expected in mid-2009. As a result of HSWAC's marketing efforts, it has secured signed Letters of Intent from approximately 25% of the 20,000 ton break-even point for the project.[17]

HSWAC is highly experienced, well financed, and capable of installing and operating a SWAC system for potential customers. HSWAC was founded by Market Street Energy

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[15] Assuming the rebate is offered for a period extending over the next several years, the rebate request is also timed to provide an incentive to customers who may adopt SWAC at a later date and for later SWAC projects.

[16] *See* Transcript of Proceedings Vol. II at 490, lines 6-9.

[17] HSWAC has informed all potential customers about efforts to obtain a rebate to offset interconnection costs and other related costs.

Company, LLC, of Saint Paul, Minnesota. Market Street is the product of the nation's most successful public/private energy partnership for over 25 years and is a highly experienced leader in the design, operation and management of renewable energy systems. Market Street personnel developed Europe's largest SWAC project in Stockholm, Sweden with approximately 80,000 tons of air conditioning load.

HSWAC has taken numerous concrete steps toward successful completion of the project and toward further widespread development of SWAC in Hawaii. HSWAC began preliminary work on the Downtown SWAC project in Honolulu in November 2003, three years ago. To date, it has spent approximately $3 million on the project. HSWAC has secured State legislature authorization for $80 million in tax-exempt Special Purpose Revenue Bonds for the project. HSWAC has retained Makai Ocean Engineering to design and engineer ocean pipes, the Honolulu office of The Environmental Company to obtain environmental permits and approvals, and a Honolulu law firm to provide legal services. HSWAC has also met with top officials from the administrations of Governor Lingle and Mayor Hannemann to ensure their support for the Downtown SWAC project.

4. Delaying the rebate by several years, as recommended by the Consumer Advocate, is not warranted.

In light of the foregoing, postponing consideration of a rebate for SWAC for up to five years, as the Consumer Advocate has suggested in its Opening Brief,[18] is plainly not warranted or appropriate. The Consumer Advocate recommends that the Commission:

> not address SWAC projects in approving rebate levels for the CICR program. Rather, action on the SWAC proposal should be deferred and considered in the development of HECO's fourth IRP, which is to be filed on or about the fourth quarter of 2008 and would include a five-year action plan for 2009 through 2014.

Id. 66 (emphasis added).

[18] *See* Division of Consumer Advocacy's Opening Brief filed Oct. 25, 2006 at 64-67.

Based on the time required to complete HECO's 2nd and 3rd IRPs, deferring the proposed rebate to the fourth IRP is likely to result in a final decision on the rebate as late as 2012 – about five years from now. From inception to Commission approval, HECO's first IRP required approximately three years[19] and its second IRP required approximately six years.[20] HECO's third IRP was opened September 11, 2003 and has yet to conclude.[21] The CA proposes to consider SWAC in a fourth IRP to begin on or about the fourth quarter of 2008." Consumer Advocate Opening Brief at 66. Based on past experience, assuming the fourth IRP requires approximately four years to complete, potential SWAC customers will not know if a rebate is available until 2012 – far too late to "move the market" for the Downtown SWAC project.

HECO disagrees with the Consumer Advocate on this issue and has requested the Commission to allow HECO to provide SWAC rebates through its CICR Program. *See* HECO Opening Brief at 138. The Consumer Advocate's stated reasons in support of its proposed delay do not withstand scrutiny and there is no sound basis for further delay.

a. Rebate authorization is needed now, regardless of the commercial start date.

As explained above, authorization for the rebate is needed now, in 2006-07, to provide an incentive for customers who are right now deciding whether to sign contracts for SWAC service. The Consumer Advocate, however, suggests a later commercial service date is a basis for postponing the rebate, noting that "a SWAC project is unlikely to begin commercial operation in the next year or two. Thus, at a practical level, such a project would not have a bearing on HECO's DSM budget for some time to come." *Id.* at 65.

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[19] *See* Decision and Order No. 11523 filed March 12, 1992 in Docket No. 6617 (establishing IRP Framework); Decision and Order No. 13839 filed March 31, 1995 in Docket No. 7257 (approving HECO's first IRP).

[20] *See* Decision and Order No. 13839 filed March 31, 1995 in Docket No. 7257 (ordering HECO to submit its second IRP by Jan. 1, 1997); Decision and Order No. 18340 filed Jan. 29, 2001 in Docket No. 95-0347 (closing the docket for the second IRP).

[21] *See* Decision and Order No. 20430 filed Sept. 11, 2003 in Docket No. 03-0253 (ordering commencement of HECO's third IRP cycle).

At this time, however, HREA seeks rebate approval rather than rebate payment. To create an incentive, potential customers merely need to know that a rebate has been approved and may be available to them in conjunction with commencement of commercial service. That approval is needed now. Payment of the rebate, which may have a bearing on HECO's DSM budget in conjunction with commencement of commercial service at later date, should not be a basis for postponing rebate approval at this time.

The Consumer Advocate further suggests the rebate should be postponed because the Commission will be unable to determine the proper rebate level if rebate payments are not made until commencement of commercial service. HREA submits that its $500 per ton requested rebate level is well-supported by the record and its submissions before the Commission.

Nor is the overall potential impact on HECO's DSM budget a basis for a five-year delay on the rebate request. In a footnote, the Consumer Advocate notes that "a proposal for a $500 per ton rebate for a 25,000 ton central SWAC system would cost consumers $12.5 million, more than 60% of HECO's total proposed budget for program expenses in this proceeding." *Id.* at 65, n. 40. HECO provides a first year cost estimate of $3,372,462 for its proposed enhanced CIEE Program. HECO Opening Brief at 78. HREA submits that this is not a basis for delaying authorization of the rebate. Rather, if necessary, the Commission may consider requiring HECO to increase the CIEE Program budget as needed. Indeed, it appears the budget must be expanded even at HECO's proposed $150 to $230 per ton rebate. This is reasonable and appropriate insofar as HREA has submitted ample information establishing utility system benefits commensurate with the requested $500 rebate level.

b. An unnecessary delay of several years may ultimately prove fatal to the project.

The five-year delay recommended by the Consumer Advocate may jeopardize the viability of the Downtown SWAC project. Such a delay will likely increase project costs. For

renewable energy projects, the initial capital cost represents the bulk of its lifetime cost. The initial capital cost is incurred prior to start-up. As a result, most renewable energy projects are financed by project proceeds. Project costs increase in direct proportion to increased time and effort responding to bid proposals, obtaining permits and approvals, and negotiating contracts. A five-year delay of the Downtown SWAC project is estimated to add approximately $20 million to project costs at an inflation rate of 3%.

District-wide renewable energy projects such as the Downtown SWAC project are broad in scope and require the coordination of a range of public and private entities. Delays may negatively impact investor and customer confidence in the project. Recovering the lost confidence is often more resource-intensive and costly than initial efforts to achieve such confidence. Customers may seek other air conditioning alternatives. Delays can also cause project milestones to be missed, resulting in the re-initiation and duplication of interdependent project activities and tasks. Project delays will increase the risk of personnel, administration, and policy changes that can limit the window of opportunity to create and sustain project momentum.

c. HREA has provided sufficient information.

The Consumer Advocate suggests a delay of up to five years is warranted because it has "insufficient information to determine whether HREA's proposal represents a viable DSM option that merits an commitment of DSM program dollars through this proceeding." *Id.* at 64 (emphasis added). HREA has provided information in response to all requests received from the Consumer Advocate, however, and there is ample information before the Commission establishing the Downtown SWAC project is viable and cost-effective.

HREA has responded to all Information Requests ("IRs"). On September 8, 2006, the Consumer Advocate submitted ten IRs to HREA. On September 22, 2006, HREA provided a

substantive response to each of these ten IRs.[22] For four of these IRs, HREA promised to provide additional confidential information upon entry of a protective order. On October 6, 2006, the Consumer Advocate filed its position statement listing nine bullet-point examples of information it claimed HREA failed to provide that was necessary to evaluate the rebate request. *See* Consumer Advocate SOP at 7-9. On October 10, 2006, after entry of the protective order, HREA provided dozens of pages of confidential data and spreadsheets to the Consumer Advocate.[23] This confidential information directly and sufficiently responded to six of these nine bullet-point items.

With regard to the remaining three bullet-point items, the Consumer Advocate requested the "Annual usage of existing air conditioning in ton-hours for the buildings to be served by the SWAC central chiller plant. (HECO-IR-101-e.)" *Id.* This information had already been provided in the form of HREA's response HECO-IR-101-e.[24]

Second, the Consumer Advocate requested "[t]he type of equipment that each customer would need to install in order to utilize chilled water from the SWAC plant, and the cost to operate and maintain that equipment (CA-IR-5)." *Id.* HREA provided this information in the form of two large, half-page diagrams depicting the type of equipment customers would need to install.[25] As a practical matter, detailed information is available only for customers whose buildings have been surveyed. Such customers may not have authorized release of that information.

Finally, the Consumer Advocate requested "[t]he list of buildings that contain potential customers for the chilled water from the SWAC plant (CA-IR-2)." *Id.* HREA provided this

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[22] Division of Consumer Advocacy's Comments on Hawaii Renewable Energy Alliance's Sea Water Air Conditioning Proposal filed Oct. 6, 2006 ("Consumer Advocate SOP").

[23] *See* Hawaii Renewable Energy Alliance's Supplemental Response to Post-Hearing Information Requests from Life of the Land, HECO/MECO/HELCO, and the Consumer Advocate on HREA Hearing Exhibit No. 2 filed Oct. 10, 2006 ("HREA Supp. Response to LOL/HECO/CA IRs").

[24] *See* Hawaii Renewable Energy Alliance's Response to Post-Hearing Information Requests from Life of the Land, HECO/MECO/HELCO, and the Consumer Advocate on HREA Hearing Exhibit No. 2 filed Sept. 22, 2006 ("HREA Response to LOL/HECO/CA IRs") at 18. As noted in that response, the composite average ton-hours for the 25,000-ton Downtown SWAC system is estimated to be 101,450,000 ton-hr/yr.

[25] *See* HREA Response to LOL/HECO/CA IRs at 28.

information in the form of a full-page map depicting the proposed downtown Honolulu service area and its buildings.[26] Presumably, the purpose of this information is to verify cost-effectiveness. HREA has provided ample confidential data and spreadsheets to establish cost effectiveness, regardless of the specific buildings and systems to be replaced.[27]

5. The timing of the rebate request is not a basis for further delay.

Finally, the Consumer Advocate appears to imply that HECO's failure to include SWAC in its third Integrated Resource Plan ("IRP 3") is grounds for delaying approval of the rebate request. When HECO was selecting technologies for inclusion in IRP 3, HSWAC made extensive, diligent and timely efforts to persuade HECO to include SWAC.[28] HSWAC met with HECO representatives and provided substantial data and information in support of including SWAC in IRP 3. Despite these efforts, HECO excluded SWAC and the rebate request was not initially included in IRP 3. Rather, the Commission admitted Hearing Exhibit 2 into the record in conjunction with an evidentiary hearing on August 31, 2006.

HREA believes HECO's decision to exclude SWAC from IRP 3 was not justified. Given that SWAC technology is a proven, large-scale, commercially-available, renewable energy-

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[26] *See* HREA Response to LOL/HECO/CA IRs at 25.

[27] For example, variations between buildings will have minimal effect on the evaluation of SWAC system benefits. The Downtown SWAC project is expected to involve approximately 40 customer buildings. The average size of these customers is approximately 625 tons. A 20% variation in the performance of a typical customer would have only a 0.5% (= 2.5% x 20%) impact on the entire system. Thus, each average size customer has a relatively small effect on composite system performance. This same performance variation for even a relatively large (i.e., 2,000-ton customer) would have only a 1.6% (= 8% x 20%) impact on total system performance.

[28] HECO has been aware of SWAC technology for several years. In March 2003, the Department of Business, Economic Development, and Tourism (DBEDT) conducted the Innovative Energy Systems Workshop, which presented information about SWAC technology and its potential in Hawaii (particularly for HECO's service territory of Oahu). Various HECO personnel were invited to participate in this workshop. The proceedings of this workshop were also made available to HECO personnel. As a result of this workshop, HSWAC was founded by Market Street Energy Company, LLC, of Saint Paul, Minnesota. HSWAC was founded to develop seawater air conditioning projects in Hawaii. Beginning in 2004, HSWAC has met many times with HECO personnel to discuss SWAC technology and the Downtown Honolulu and Waikiki SWAC Projects. Several of these meetings involved a discussion of utility rebates available for SWAC. Although HECO was exposed to SWAC, HECO did not incorporate SWAC into its Maximum Achievable Potential (MAP) analysis of potential DSM measures. HSWAC contends that during the IRP 3 process HECO failed to properly evaluate the commercial status and cost effectiveness of SWAC and thus SWAC was improperly excluded from HECO's proposed IRP 3 plan. It is noted that at this time HECO has not fully evaluated SWAC as a renewable energy DSM alternative or investigated how the SWAC output matches HECO's system peak load.

based, demand side management technology that has been used for a many years in locations worldwide, and substantial information was provided to HECO in support of including SWAC in IRP 3, SWAC should have been included. HREA submits that SWAC should not now be penalized, directly or indirectly, because the rebate request is not included in IRP 3 but was subsequently admitted by Commission order.

C. The Rebate Level of $500 Per Ton Is Necessary to Overcome Market Barriers and "Move The Market."

Neither HECO nor any other party or participant has argued no incentive is required for SWAC. To the contrary, HECO has stated that "sea water air-conditioning, if shown to be cost-effective, should be eligible for demand-side management ("DSM") program rebates."[29] At the same time HECO has expressed its general support for SWAC rebates, however, it insists on a rebate level that fails to provide even the minimum sufficient incentive for building owners to pay the cost of connecting to the SWAC system.

1. The requested rebate of $500 per ton is needed to overcome the interconnection cost market barrier.

An economic incentive is required to ensure building owners overcome market barriers. As HECO notes in its Opening Brief, "[i]n DSM program design, one of the key considerations utilized to set customer rebate levels is to set them at levels that are necessary to motivate customers to adopt cost-effective DSM measures (i.e., move the market)[.]" *Id.* at 140.

The requested rebate of $500 per ton is needed to overcome the market barrier of interconnection costs. A SWAC system essentially delivers cold water to a customer's building. Interconnection costs are costs associated with connecting the SWAC chilled water distribution system with a building's air conditioning system piping. Some building modifications may be necessary depending on the location of existing chillers and cooling towers and characteristics

[29] *See* HECO's Statement of Position on Hawaii Renewable Energy Alliance's Seawater Air Conditioning Project, filed Oct. 6, 2006 ("HECO SWAC SOP") at 4.

of a building's chilled water distribution system. Interconnection costs are estimated to be $300 per ton. For a potential SWAC customer, this may be one of the greatest market barriers.

2. The requested rebate is also needed to overcome other market barriers.

The balance of the requested rebate, approximately $200, is needed to overcome a host of market barriers in addition to interconnection costs. HECO states in its Opening Brief, "[i]t is not clear, either in the documents provided by HREA or in their panel testimony, why the rebate request should not be $300/ton rather than the $500/ton requested by HREA if the proposed rebate is based on the customer's interconnection cost." *Id.* at 143.

The short answer to HECO's question is that SWAC faces many other market barriers in addition to interconnection costs. Market barriers are forces in the marketplace of goods and services which inhibit customer selection of alternative renewable energy systems and DSM measures. Market barriers slow the rate of adoption of new and improved technologies and create inertia based on a preference for conventional technologies. HSWAC and its potential customers must overcome several market barriers to successfully implement the Downtown SWAC project.

HECO's proposal to offer a non-prescriptive rebate through its CICR Program, which will not be a fixed amount, may itself constitute a market barrier. HECO estimates a rebate of $150 to $230 per ton may be available to SWAC customers. This is not a fixed amount. Insofar as potential customers require a fixed rebate amount, the lack of a fixed amount is a market barrier. For example, on Oahu, customers know that they can receive a $750 rebate for installation of a solar water heating. They also receive State and federal tax credits. Certainty regarding the availability and amount of the rebate, and the cost of the solar water heating system, allows potential customers to determine whether it is a good investment for them. Such certainty has contributed to the success of the rebate program. Under HECO's proposal,

potential SWAC customers do not have the benefit of knowing the availability and fixed amount of any possible rebate. This presents a serious and unnecessary market barrier.

Limited knowledge about district energy systems among potential customers and investors is another market barrier. While there are thousands of district energy systems throughout the world, there are no large-scale district energy systems in Hawaii. As a result, there is little or no experience with and knowledge of such systems. Lack of knowledge contributes to perceived risks associated with converting to a new system.

Another market barrier is over-reliance on simple payback as a decision-making tool. Businesses frequently use simple payback as a decision making tool, and commonly seek a two to three year payback on any capital investment. Simple payback analysis, however, fails to take into account the time value of money and is not an appropriate measure of cost effectiveness or return on investment for high capital cost/low operating cost renewable energy or energy efficiency projects. Life Cycle Cost Analysis (LCCA) is more appropriate for such projects. LCCA enables the analyst to make sure that the selection of a design alternative is not based solely on the lowest initial costs, but also considers all the future costs (appropriately discounted) over the project's usable life.

Perceived risks associated with SWAC are another market barrier. Energy efficiency and DSM projects are assumed by some to be more risky. (HECO has acknowledged perceived risks associated with DSM measures in its opposition to third-party administration of such measures.) Uncertainty associated with energy prices affects the value and desirability of energy alternatives and imposes risk on the potential investor. Uncertainties regarding future prices of energy and how this may affect future benefits from energy efficiency investments, combined with uncertainties about comparative system performance and costs, create uncertainties about such investments. Because of unfamiliarity with alternative energy technologies, investors and customers are not certain that these alternatives will provide equivalent levels of service.

Lack of knowledge about alternatives is a market barrier for potential SWAC customers. In order for energy markets to work well, participants must be fully informed about various alternatives. Customers may not have sufficient information to make informed choices. Many potential customers often know little about proposed alternatives. Commercial and industrial customers are also generally unfamiliar with renewables such as SWAC and have institutional barriers to purchasing renewables. Energy managers are typically trained only to find "low-cost" solutions (i.e., lower initial cost rather lower life cycle cost). Utilities may be unfamiliar with many renewable energy technologies; most have not studied how renewable resources could fit into their systems or what local resources are available.

Many building owners and operators do not have, or are unable to get, adequate information about the performance and costs of their current conventional air conditioning systems.[30] Most buildings do not monitor the performance of these systems at all or in sufficient detail to acquire the required information. In many cases, building owners and operators do not have the knowledge and expertise to analyze available data. This makes it difficult for them to compare their buildings' current performance and costs (typically unknown) with alternatives such as SWAC (which can be reliably and accurately determined through engineering analysis and experience and which can be readily confirmed due to the method of performance monitoring and billing to be used by HSWAC). For example, potential SWAC customers frequently have a number of "hidden costs" for cost components of their system which they do not measure or have not considered or included in their calculations of their conventional system performance and cost.

Transaction costs are another market barrier. There is a cost associated with acquiring and using information associated with energy system alternatives; negotiating with potential

[30] HSWAC has unique knowledge and expertise concerning the comparative performance and costs of air conditioning systems due to its extensive experience with conventional air conditioning systems, district cooling systems, and deep water cooling systems. HSWAC personnel have more than 100 person-years of training, knowledge, and experience concerning such systems. Such knowledge is not readily available to building owners and operators, or even to utility DSM program analysts and managers.

suppliers, partners, and customers; and assuming risk. High transaction costs can lead to market failure. Many utility DSM programs are attempts to reduce the magnitudes of various transaction costs.

Competition with mature and well-established conventional technologies may be a market barrier. For example, HECO's High Efficiency Cooling program is based on the replacement of less efficient conventional chillers with newer, more efficient conventional chillers. SWAC must compete with this well-established technology.

Finally, customer inertia is likely a market barrier. Many potential customers are perfectly content to continue to do things as they have always done them. Such customers typically select equipment that they are familiar with over newer, and perhaps better, alternatives. A number of customers are reluctant to commit to a new technology until others have done so. Adoption of new technology is typically gradual. Many potential customers often prefer an older, less efficient, but familiar technology over a newer, more efficient and unfamiliar technology.

There are many other market barriers in addition to the foregoing, all of which must be overcome by HSWAC and potential SWAC customers. Based upon discussions with building owners in the Downtown SWAC project area, and its extensive professional experience, HSWAC estimates that the additional rebate level of $200 is likely to provide sufficient incentive for potential customers to overcome these other market barriers.[31] Thus, the proposed $500 per ton rebate level is expected to allow potential customers to overcome all market barriers.

3. The requested rebate of $500 per ton is consistent with other rebates.

Rebates generally should be directly proportional to utility system benefits, and widespread use of SWAC on Oahu will provide system benefits far in excess of $500 per ton.

[31] As HECO has affirmed, determination of the correct rebate level "is not an exact science, and rebate levels may be changed from time to time based upon experience and market conditions." HECO Opening Brief at 39, no. 30 (emphasis added).

For example, one ton of SWAC provides utility system benefits at least equivalent to those provided by solar water heating systems, the rebate for which is $750 – much more than the $500 per ton requested. Given that the benefits of SWAC to the utility are far in excess of HECO's proposed rebates, and rebate levels should be increased to a level commensurate with those benefits and to make them more equitable with other technologies that provided similar benefits.

The $500 per ton rebate for SWAC systems, which represents approximately 12% of the cost differential between conventional air conditioning and SWAC systems, is also well within the acceptable range of cost differentials for HECO rebates. HECO offers rebates on other technologies which represent 23% to 100% of the technology's cost differential. For example, HECO provides a rebate representing 30 to 45% of the differential cost for T8 fluorescent lighting, a well established commercial and industrial DSM measure with a simple payback of 1.4 to 2.1 years.

In addition, the proposed $150 to $230 per ton rebate level is far below the rebate level derived from calculations of per ton rebate levels, under HECO's Consumer and Industrialized Customized Rebate ("CICR") and Commercial and Industrial Energy Efficiency ("CIEE") rebate programs, based on average incentive cost, capacity savings, and energy savings. The average incentive cost for all DSM programs during the 2009 to 2010 period,[32] is $0.135/kWh and $338/kW.[33] Applying this average incentive cost, the projected energy savings,[34] and estimated capacity savings of 0.63 kW/ton[35] yields a SWAC rebate level under the CICR Program of $631/ton. A similar analysis under the CIEE Program, with an average incentive

[32] This is the time period the Downtown SWAC system will become fully operational.
[33] *See* Exhibit A to HREA Supp. Response to LOL/HECO/CA IRs. The average rebate cost per kWh saved (first year) and per kW saved is calculated as follows: (1) $/kWh saved = Total Incentive Costs / (kWh saved +2,500 x kW saved); and (2) $/kW saved = 2,500 x $/kWh saved.
[34] See HREA Response to LOL/HECO/CA IRs at 6.
[35] This is HREA's calculated peak day daytime demand reduction. HREA believes that this figure accurately represents actual utility system benefits.

cost of $0.107/kWh and $266/kW, yields a rebate level of $497/ton. Both are significantly higher than HECO's proposed rebate.

4. There is no sound basis for HECO's proposed $150 to $230 per ton rebate.

HECO agrees a rebate is necessary but proposes a rebate in the range of $150 to $230 per ton. *See* HECO Opening Brief at 137. This is less than half the requested level. For the reasons given above, it is insufficient to move the market.

HECO suggests the success of the CICR Program in exceeding its annual budget is proof that its proposed $150 to $230 rebate level is sufficient to move the market of large commercial building owners targeted for the Downtown SWAC project. *Id.* at 141. The CICR Program budget may be exceeded for a number of reasons, however, including initially being set too low. HREA submits the Commission should rely on more directly relevant factors than budget exceedances in determining rebate levels.

HECO further suggests that if it increases its CICR rebate level above the proposed $150 to $230 per ton level "ratepayers could end up paying more than necessary to customers who are already being sufficiently encouraged to install DSM measures under current rebate levels[.]" *Id.* This argument is not persuasive insofar as HECO's proposed rebate level fails to pay prospective customers the $300 per ton interconnection costs, or enough to overcome other market barriers.

Similarly, HECO's attempt to characterize the rebate as benefiting HSWAC –rather than benefiting customers, the utility, the larger society and Hawaii's environment – also does not justify a lower rebate level. HECO states: "If additional information is provided by HREA that indicates the level of rebate is inadequate to move the market (e.g., if HECO found that SWAC project returns were marginal at the current levels of CICR Program customer rebates) . . . ." HECO Opening Brief at 142. HECO similarly characterizes the requested rebate as possibly "just adding to the profits of HSWAC." *Id.*

The rebate is paid to customers, however, and not to HSWAC. As explained above, the purpose of the requested rebate is to overcome market barriers to foster widespread adoption of renewable energy in accordance with Hawaii state law and policy. HSWAC is merely a provider of renewable energy to customers. HSWAC does not seek a rebate to boost its profits. HSWAC seeks a rebate to move potential customers to switch from fossil fuels to renewable energy by signing contracts for SWAC service. HREA submits that the Commission should set the rebate level based on quantifiable economic and environmental benefits and well as public policy, rather than speculation concerning a service provider's returns or profits.

HECO expresses a similar concern in a footnote, stating: "It is also uncertain as to what levels of DSM support above the current CICR Program level may be necessary or appropriate (given the forms of support, such as tax incentives and special purpose revenue bonds) [sic] available to SWAC." *Id.* at 139, n. 67. HREA submits the required levels of support are not "uncertain" insofar as the project must overcome the market barriers discussed above, including the $300 per ton interconnection cost, which itself exceeds HECO's proposed rebate level.

HECO also notes without elaboration that "the total rebate for one system could be as much as $12.5 million." HECO Opening Brief at 137. HECO provides a first year cost estimate of $3,372,462 for its proposed enhanced CIEE Program. *Id.* at 78. Because its proposed budget could be exceeded, HECO appears to imply that the Commission should adopt the lower $150 to $230 per ton rebate. HREA submits this is not a basis for adopting a lower rebate level, which is unlikely to move the market. Rather, if necessary, the Commission may consider requiring HECO to increase the CIEE Program budget as needed (and as it appears HECO must even at its proposed $150 to $230 per ton rebate level). This is reasonable and appropriate insofar as HREA has submitted ample information establishing utility system benefits commensurate with the requested $500 rebate level.

Finally, to the extent HECO's proposed $150 to $230 per ton rebate fails to move the market by not paying even the interconnection costs, it is inconsistent with HECO's avowed

support for SWAC in Hawaii. HECO has written an open letter dated August 1, 2006 addressed to prospective HSWAC customers, the purpose of which is "to strongly urge you to carefully consider utilizing renewable energy deep-water cooling for your building's air conditioning requirements." *Id.* The letter is to be "viewed as a recommendation to carefully consider the HSWAC proposed renewable energy program for your building." *Id.* HECO has also embarked upon a public relations campaign promoting energy efficiency and renewable energy in Hawaii. Such advertisements have featured SWAC as well as other technologies. And HECO's submissions to the Commission express strong support for SWAC in Hawaii,[36] as well as for an expanded DSM program:

> It is reasonable for HECO to pursue an expanded portfolio of energy efficiency programs at this time. With evidence of strong support from the local community and the benefit of a national trend toward expanded DSM, now is a perfect time for HECO to expand its program offerings. The Company will work effectively with local partners to offer new and expanded programs with the confidence that greater amounts of data are available from national sources to best understand the newly-targeted market segments and end-uses.

HECO Opening Brief at 46 (emphasis added).

Given HECO's publicly-stated expressions of support for SWAC and DSM measures, which are welcome and appreciated, the Commission should require HECO to provide a rebate level that is most likely to overcome market barriers and ensure the success of SWAC in Hawaii.

D. The requested $500,000 per customer rebate limit is sufficient to create an incentive.

The Commission should grant HREA's requests for a $500,000 per customer rebate limit. The $500,000 per customer rebate limit is sufficient to provide incentive to larger prospective customers with relatively high interconnection costs due to relatively high cooling

[36] *See, e.g.,* HECO's Opening Brief at 137, n. 4 (HECO "welcomes the development and installation of SWAC systems in Hawaii"); HECO SWAC SOP at 4 ("HECO supports HREA's efforts to establish a SWAC system on Oahu. In fact, HECO has offered its headquarters building located at 900 Richards Street as a potential site [to be air conditioned using SWAC].").

demand of greater than 1,000 tons. It is estimated a relatively small percentage of customers will seek rebates totaling $500,000 or close to that level. For those customers, the rebate will continue to serve as an incentive even if it is paid to the customer over a period of years, rather than in one year. HECO's proposed $350,000 per customer rebate limit is not sufficient to create the required incentive.[37]

E. A Prescriptive Rebate Is Appropriate and Justified.

1. A prescriptive rebate is needed to avoid creating market barriers due to uncertain rebate levels, pre- and post- monitoring, and third-party review.

As explained above, HECO's proposal to offer a non-prescriptive rebate may itself constitute a market barrier. HECO estimates a rebate of $150 to $230 per ton may be available to SWAC customers. Insofar as potential customers require a rebate of a known amount, the lack of a fixed amount is a market barrier. A prescriptive rebate is for a fixed amount and therefore will not create a barrier to successful adoption of SWAC in Hawaii.

In addition, the CICR Program requires pre- and post-installation monitoring to verify energy efficiency benefits, which also contributes to market barriers. *See* HECO Opening Brief at 91. As HECO has acknowledged, "[s]ince each CICR Program application can be unique, the program is labor intensive and requires significantly more engineering and technical review that the prescriptive CIEE Program." *Id.* at 90 (emphasis added). This is because:

> When a project is submitted under the CICR Program, HECO assigns an engineer to that program or project. That engineer works directly with the facilities engineer to consider the base technology, the efficient technology, energy saving strategies, energy saving levels, and demand saving levels. A substantial amount of analysis goes into a project before a rebate is ever paid.

Id. at 98 (emphasis added).

[37] *See* HECO Opening Brief at 40 (proposing to increase the maximum single customer rebate limit for the CIEE, CINC and CICR Programs from $250,000 to $350,000 based on inflation since initial project implementation in the mid-1990s).

No such monitoring is appropriate for SWAC systems. Pre-installation monitoring is not appropriate because the energy efficiency benefits of similar systems are well documented.[38] Post-installation monitoring is also not appropriate. As part of its billing process, HSWAC will determine customers' actual cooling loads and specific SWAC system energy use (kWh/ton-hr). By applying reasonable engineering assumptions about displaced conventional cooling systems (as HECO has done in its MAP analysis of commercial air conditioning DSM measures),[39] it is possible to calculate pre-installation energy use, demand requirements, and savings.

Similarly, the CICR Program requires independent third-party review of the proposed energy efficiency technology, which may also act as a disincentive. Independent third party review is plainly not warranted for SWAC systems insofar as the technology is well-established and had been successfully deployed for many years in Hawaii and several other locations around the world.

2. SWAC is compatible with the with the CIEE Program, which uses a prescriptive rebate.

The CIEE Program provides prescriptive rebates, which means customers participate by purchasing qualifying equipment and applying for rebates up to six months after the time of purchase. HECO Opening Brief at 69. All HECO customers that are metered under certain commercial utility tariffs are eligible for the CIEE Program. *Id.*

SWAC is a good fit for the CIEE Program because it will replace cooling already targeted by that program. It is estimated to require eight years to develop 100,000 tons of SWAC beginning with the first system (25,000 tons in Downtown Honolulu) in 2009. Approximately 12,500 tons/year of SWAC will therefore be developed over the period of 2009–2016. SWAC

[38] Seawater and lake water cooling technology is being used in cities such as Toronto, Canada; Ithaca, New York; and Stockholm, Sweden. There are over 40 commercial district cooling utility systems in North America and approximately 2,000 district cooling systems used in institutions such as universities, hospitals, airports, and military facilities in North America.

[39] Chiller and heat rejection system efficiency was determined through a weighed average of individual building chiller and heat rejection system efficiencies for the surveyed buildings. Average chiller and heat rejection system efficiency was determined to be 0.88 kWh/ton-hr. This result is very close (i.e., within 4%) to the chiller (i.e., chiller + cooling system) "peak efficiency" of 0.85 kW/ton for existing large office buildings assumed by Global Energy Partners in their analyses for HECO.

will likely replace 12,500 tons/yr (of 25,740 ton/yr) of cooling in the CIEE Program (i.e., the proportion of customers who previously may have considered replacing existing chillers with more efficient chillers). SWAC will also improve the CIEE Program by providing relatively low marginal costs for kW and kWh savings and low implementation costs due to the involvement of private developers such as HSWAC.

In addition, the CIEE Program contains a High Efficiency Cooling component for potential customers of higher efficiency chillers in commercial and industrial settings. These same customers are potential SWAC customers. Therefore, it is appropriate for the SWAC rebate to be provided by the CIEE Program.

By contrast, the CICR Program is not appropriate for SWAC systems. Most importantly, unlike the CIEE Program the CICR Program does not utilize a prescriptive rebate. The Downtown SWAC project does not fit the criteria for the CICR Program set forth by HECO in its Opening Brief:

> The CICR Program was designed to encompass the installation of energy efficient equipment not specifically identified in any of the other prescriptive DSM programs. These include DSM measures that are not widely available in the market and where HECO does not have previous experience documenting the measure savings. As discussed in HECO T-11, Docket No. 04-01 13, at page 32, '(t)his program was developed to address the large number of DSM measures that are available, which, due to the limited potential size of the market for these measures or to the site-specific savings resulting from their installation, do not lend themselves to a prescriptive rebate program design. These measures include the redesign of air conditioning systems and the installation of controls on various energy using systems."

Id. at 139 (emphasis added).

The Downtown SWAC project is not a custom, unique, building-specific measure that is "not widely available." Rather, upon implementation it will serve a district encompassing several dozen buildings and thus will be "widely available." For the same reason, there is no "limited potential size of the market" rendering the project unfit for a prescriptive rebate program. In fact, the estimated potential for SWAC development on Oahu is 100,000 tons, four times the

potential market size of the Downtown SWAC project under development. Nor is the project a "redesign of air conditioning systems." SWAC simply provides an alternative source of the chilled water that is currently used for cooling potential customers' buildings. The need for chillers and cooling towers will be eliminated. However, buildings will continue to use their own chilled water distribution and air handling systems. No "redesign of air conditioning systems" is required.

For the foregoing reasons, HREA respectfully requests the Commission to grant the rebate requested for SWAC systems in Hearing Exhibit 2, as modified by subsequent HREA filings before the Commission in this docket, including but not limited to the following: that the level of the rebate be $500 per ton; that the rebate limit be $500,000 per customer for all customers; and that the rebate be prescriptive and therefore provided through the CIEE Program rather than the CICR Program.

DATED: Honolulu, Hawaii, November 15, 2006.

Warren S. Bollmeier II
President, HREA

EXHIBIT A

Analysis of HECO's Proposed Enhanced and New DSM programs

Measure	1st Yr Costs	Incentives	Ratio-Incent.	Ratio-Admin	MWh svngs	$/MWh/1yr	$/MWh/15yr	MW red.	$/MW	$/kW
CIEE	3,372,462	2,300,000	0.68	0.32	15,226	221	15	2.3	1,466,288	1,466
CINC	1,637,950	950,000	0.58	0.42	5,823	281	19	0.9	1,819,944	1,820
CICR	1,708,376	750,000	0.44	0.56	9,583	178	12	1.2	1,423,647	1,424
REWH	2,714,493	1,500,000	0.55	0.45	2,746	989	66	0.6	4,524,155	4,524
RNC	1,972,207	1,300,000	0.66	0.34	2,542	776	52	0.8	2,465,259	2,465
RLI	916,520	589,000	0.64	0.36	0			0.6	1,527,533	1,528
ESH	1,967,445	1,200,000	0.61	0.39	0			4.1	479,865	480
Sub-Total	14,289,453	8,589,000	0.60	0.40	35,920	398	27	10.5	1,360,900	1,361
RDLC	3,704,906	375,773	0.10	0.90	0			6.2	597,565	598
CIDLC	1,699,911	230,000	0.14	0.86	0			3.0	566,637	567
Sub-Total	5,404,817	605,773	0.11	0.89	0			9.2	587,480	587
Oregon	11,000,000	9,790,000	0.89	0.11		200		20	550,000	550

Notes:

1) HECO data are from their Opening Brief

2) Oregon (Energy Trust) data are from Exhibit A of our Opening Brief

CERTIFICATE OF SERVICE

I hereby certify that I have this day served HREA's Post-Hearing Opening Brief upon the following parties and participants by placing copies of same in the U.S. Mail, postage prepaid, addressed as follows:

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DATED: Honolulu, Hawaii, November 15, 2006.

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